



Analysis of H₂-Antagonist Drugs by HPLC

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Abstract

The antiulcerative drugs cimetidine and ranitidine are used in treatment of gastritis and stomach ulcers. They are histamine H₂-receptor antagonists which inhibit the gastric acid secretion.

Figure 1 shows the HPLC separation of cimetidine and ranitidine using isocratic analysis on a reversed phase column and UV detection. The autosampler temperature was set to 4 °C to avoid decomposition of the samples.

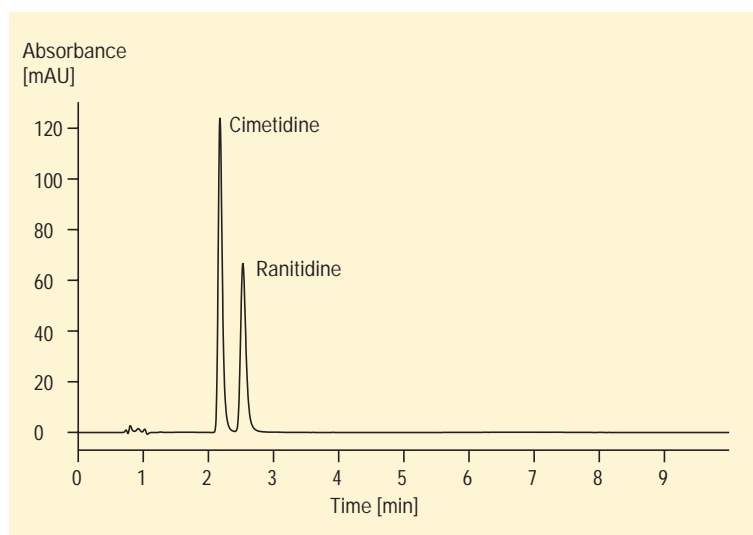


Figure 1
Analysis of cimetidine and ranitidine

Conditions

Column

4.6 x 75 mm Zorbax SB-C18 3.5 µm

Mobile phase

A = 0.025 M KH₂PO₄ in water
(pH = 3 with H₂SO₄)

B = acetonitrile

Flow rate

1.0 ml/min

Isocratic

8 % B for 10 min

UV detector

variable wavelength detector
225 nm, standard cell

Column compartment temperature

25 °C

Stop time

10 min

Injection volume

5 µl



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The performance of the HPLC method is shown in the table below.

Compound	LOD for S/N=2 (mg/l)*	Precision of RT (RSD of 10 runs) (100 mg/l)*	Precision of Area (RSD of 10 runs) (100 mg/l)*
Cimetidine	0.2	0.08	0.67
Ranitidine	0.2	0.08	0.49

* Injection volume: 5 µl

The HPLC method presented here shows an easy but reliable and precise analysis of the H₂-antagonist drugs cimetidine and ranitidine. The values for LOD, precision of RT and precision of area show the good performance of the analysis.

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Released 08/98
Publication Number 5968-1114E

Equipment

Agilent 1100 Series

- Quaternary pump (includes vacuum degasser)
- Thermostatted autosampler
- Thermostatted column compartment
- Variable wavelength detector, standard flow cell, 10-mm path length, 13-µl cell volume

Alternative:

- Vacuum degasser
- Binary pump
- Diode-array detector, standard flow cell 10-mm path length, 13-µl cell volume
- Agilent ChemStation + 3D software

Columns

- Zorbax SB-C18, 3.5 µm, 4.6 x 75 mm (Agilent part number 866953-902)
- *Recommended:* Guard cartridges Zorbax SB-C18, 5 µm, 4.6 x 12.5 mm (Agilent part number 820950-920, 4/pk)

Note:

Since the method was specifically developed on the Agilent 1100 Series system you might not be able to reproduce this analysis on an older system or even on a new system with lower performance. To avoid sample decomposition it is necessary to use a cooled autosampler, for example, the Agilent 1100 Series thermostatted autosampler.



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